

Claims

What is claimed is:

1. A method for controlling a motorized system comprising:
 - measuring an attribute of the motorized system;
 - diagnosing a health of the motorized system based on the measured attribute;
 - providing a diagnostics signal based on the diagnosed health; and
 - providing a control signal based on the diagnosed health
2. The method of claim 1, further comprising operating the motorized system according to the diagnostics signal.
3. The method of claim 1, further comprising modifying a setpoint of the motorized system.
4. The method of claim 1, wherein diagnosing the health comprises obtaining a frequency spectrum of the measured attribute and analyzing the frequency spectrum to detect adverse operating conditions.
5. The method of claim 5, wherein analyzing the frequency spectrum comprises analyzing the frequency spectrum to detect faults, component wear and component degradation.
6. The method of claim 5, wherein measuring the attribute comprises measuring an attribute associated with a motorized pump.
7. The method of claim 1, wherein measuring the attribute comprises measuring an attribute associated with a fan.

8. The method of claim 1, wherein measuring the attribute comprises measuring an attribute associated with the motorized system selected from the group comprising motorized pump, fan, conveyor system, compressor, gear box, motion control device, screw pump, mixer, hydraulic machine and pneumatic machine.
9. The method of claim 1, wherein measuring the attribute comprises measuring a vibration of the motorized system.
10. The method of claim 1, wherein measuring the attribute comprises measuring a speed of the motorized system.
11. The method of claim 1, wherein measuring the attribute comprises measuring a temperature of the motorized system.
12. The method of claim 1, wherein diagnosing the health comprises analyzing an amplitude of a first spectral component of a frequency spectrum at a first frequency.
13. The method of claim 1, wherein providing the control signal comprises providing the control signal to increase cavitation to reduce damage to the motorized system.
14. The method of claim 1, wherein providing the control signal comprises providing the control signal to reduce cavitation to extend an operating lifetime of the motorized system.
15. The method of claim 1, wherein providing the control signal comprises generating the control signal and transmitting the control signal via a wireless network.
16. The method of claim 1, wherein providing the diagnostic signal comprises generating the diagnostic signal and transmitting the diagnostic signal via a wireless

network.

17. The method of claim 1 being implemented on a system connected to the motorized system via a wireless network.
18. The method of claim 1, wherein measuring the attribute comprises receiving measurements from at least one sensor.
19. A control system for controlling a motorized system comprising:
 - means for measuring an attribute of the motorized system;
 - means for diagnosing a health of the motorized system;
 - means for providing a control signal; and
 - means for providing a diagnostic signal.
20. The control system of claim 19, further comprising:
 - means for modifying operation of the motorized system based on the diagnostic signal.
21. The control system of claim 19, further comprising:
 - means for modifying operation of the motorized system based on the control signal.
22. A system comprising:
 - a motorized system;
 - a communications link coupled to the motorized system; and
 - a control system coupled to the communications link comprising:
 - a controller coupled to the communications link adapted to operate the motorized system in a controlled fashion; and
 - a diagnostics system coupled to the communications link adapted to

diagnose the health of the motorized system according to at least one measured attribute associated with the motorized system.

23. The system of claim 22, wherein the at least one measured attribute comprises at least one of vibration, pressure, current, speed, and temperature.
24. The system of claim 22, wherein the motorized system comprises components, devices, subsystems and process controls.
25. The system of claim 24, wherein the components comprise bearings, the devices comprise a motor, pump and fan, the subsystems comprise a motor-drive-pump and process controls comprise a pump fluid control.
26. The system of claim 22, wherein the motorized system comprises a motor and a load, and wherein the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox.
27. The system of claim 24, wherein the diagnostics system provides a diagnostics signal, and wherein the controller provides a control signal
28. The system of claim 27, wherein the diagnostics signal represents health of the motorized system and the control signal represents control information for the motorized system.
29. The system of claim 24, wherein the controller provides a control signal, wherein the control signal contains control information for controlling at least one of the components, the devices, the subsystems and the process controls.
30. The system of claim 22, further comprising at least one sensor coupled to the

motorized system and the communications link for measuring the at least one measured attribute.

31. The system of claim 22, wherein the communications link is a wired connection.
32. The system of claim 22, wherein the communications link is a wireless connection.
33. The system of claim 22, wherein the communications link is a wireless radio frequency system.
34. The system of claim 22, wherein the communications link is a wireless network.
35. The system of claim 22, wherein the control system is implemented on a computer system.
36. A system to facilitate controlling a motorized system, comprising:
 - at least one sensor that senses at least one attribute of the motorized system;
 - a diagnostics system that diagnosis a state of the motorized system based at least in part on the at least one sensed attribute;
 - a prognostic system that makes a prognosis of the motorized system based at least in part on the at least one sensed attribute and/or the diagnosed state; and
 - a controller that controls the motorized system based at least in part on the diagnosed state.
37. The system of claim 36, the controller controlling the motorized system based at least in part on the prognosis.
38. The system of claim 37, the controller automatically adjusting operation of the

motorized system based at least in part on prognosed future states of the motorized system.

39. The system of claim 36, the prognostic system comprising a non-linear training system.

40. The system of claim 36, the prognostic system inferring future operating states of the motorized system.

41. The system of claim 36, the controller automatically adjusting an operating state of the motorized system based at least in part on the prognosis.

42. The system of claim 36, the controller scheduling preventive maintenance for the motorized system based at least in part on the prognosis.